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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SHERALI, ISHRAT I	
ART UNIT	**PAPER NUMBER**
2621	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/800,687	SCHWARTZ ET AL.	
	Examiner	Art Unit	
	Sherali Ishrat	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 25-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 25-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/2/04 and 4/9/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment/Arguments

1. This action is in response to applicant's amendment/argument filed on 7/16/2004.

Applicant's arguments are fully considered however they are not persuasive with respect to art rejection. See the remarks section for detailed discussion.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-9, 25-45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding independent claims 1, 4, 7, 37, 44, and 45, amended limitation in lines 3-4, recites "wherein the refinement bits are generated based on bits from coefficients that became significant in a significance propagation pass of a previous bit-plane". The specification, in page 57, discloses refinement bits, however the specification does not disclose that the refinement bits are generated based on bits from coefficients that became significant in a significance propagation pass of a previous bit-plane. Claims 2-3, 5-6, 8, 25-36, and 38-43 are dependent on independent claims therefore they are also rejected.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-9 are rejected under 35 USC § 102 (e) as being anticipated by Ordentlich et al (6, 263,109).

Regarding claims 1, 4 and 7, Ordentlich discloses performing a refinement coding pass to bit-planes of a code block to create refinement bits (Ordentlich, in col. 4, lines 41-45, states "Refinement information in a bit-plane refers to those bit-plane [bn,i] for which one of those bn,i [bits] for which one of those bits bm,i.....bn+1, I are non-zero (that is information in the plane n for coefficient that has already found to be significant", which corresponds to performing a refinement coding pass to bit-planes of a code block to create refinement bits),

the refinement bits are generated based on bits from coefficients that became significant in a significance propagation pass of a previous bit-plane (Ordentlich, in col. 7, lines 51-55, states "significance information and refinement information for the second bit-plane is as follows: the second bit of coefficient C6 provides refinement information (since coefficient C6 has already found to significant with respect to previous bit plane); and the second bits b1 of other coefficients provide significance

information". This corresponds to the refinement bits are generated based on bits from coefficients that became significant in a significance propagation pass of a previous bit-plane); and

setting refinement bits to more probable symbol (MPS) (See Ordentlich, in col. 6, lines 23-28, "the Non-Zero Neighbor subsequence is ordered in the bitstream in front of the Non-Zero Parent subsequence, the Non-Zero Parent subsequence is ordered in front of bitstream before the Run subsequence and the Refinement subsequence is ordered in the bitstream after the Run subsequences", and Ordentlich in col. 6, lines 32-40, states "the subsequences [which include Refinement subsequence as noted above] entropy encoded to extract statistical redundancy in the bitstream by estimating the probability of sequence of symbol occurring. Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits" This corresponds to setting refinement bits to more probable symbol (MPS) based on the probability of sequence of symbol occurring by assigning short code lengths to the more probable sequence of symbols in the Refinement subsequence).

the refinement bits set to the MPS are quantized as result of setting refinements bits to MPS (Ordentlich in col. 6, lines 35-40, Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". This corresponds to the refinement bits set to the MPS are quantized as result of setting refinements bits to MPS)

Regarding claims 2, 5 and 8, Ordentlich discloses only portion of the refinement bits in a codeblock are set to MPS (Ordentich in col. 6, lines 32-40, states "the subsequences [which include Refinement subsequence as noted above] entropy encoded to extract statistical redundancy in the bitstream by estimating the probability of sequence of symbol occurring. Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". This corresponds to only portion of the refinement bits in a codeblock are set to MPS) and

the portion of the refinement bits set to the MPS is transmitted a having number of bits different the number of bits of remaining portion (Ordentich in col. 6, lines 35-40, states "Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". This corresponds to the portion of the refinement bits set to the MPS is transmitted a having number of bits different the number of bits of remaining portion)

Regarding claims 3, 6 and 9 Ordentlich discloses setting of refinment bits to the MPS is performed to implement non-uniform quantization step sizes (Ordentich in col. 6, lines 35-40, states "Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". This corresponds to setting of refinment bits to the MPS is performed to implement non-uniform quantization step sizes),

the refinement bits set to MPS are quantized to a value different from values of refinement bits without being set to the MPS within the code block (Ordentlich in col.

6, lines 32-40, states "the subsequences [which include Refinement subsequence as noted above] entropy encoded to extract statistical redundancy in the bitstream by estimating the probability of sequence of symbol occurring. Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". Therefore in the system of Ordentlich long code lengths are assigned to the less probable sequence of symbols which corresponds to the refinement bits set to MPS are quantized to a value different from values of refinement bits without being set to the MPS within the code block).

Regarding claim 25, 29, 33 Ordentlich discloses identifying a target area of the refinement bits of the code block that is designated to maintain a predetermined quality of the target area (Ordentlich, in col., lines 32-35, states "The subsequence [which include refinement subsequence] is entropy coded to extract statistical redundancy in the bitstream by estimating the probability of symbols occurring". Therefore Ordentlich is also identifying non-redundant information along with statistical redundancy. Which corresponds to identifying a target area of the refinement bits of the code block that is designated to maintain a predetermined quality of the target area by identifying non-redundant information along with statistical redundancy in bitstream),

setting the refinement bits of the codeblock that do not effect the predetermined quality of the target area to MPS (Ordentlich, in col., lines 34-40 states "Short code lengths are assigned to the more probable sequence of symbol". This corresponds to setting the refinement bits of the codeblock that do not effect the predetermined quality of the target area to MPS),

while using actual value for the refinement bits that effect the predetermined quality (Ordentlich in col. 6, lines 32-40, states "the subsequences [which include Refinentment subsequence as noted above] entropy encoded to extract statistical redundancy in the bitstream by estimating the probability of sequence of symbol occurring. Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". Therefore in the system of Ordentlich long code lengths are assigned to the less probable sequence of symbols which will effect information content of subsequence when transmitted. This corresponds to using actual value for the refinement bits that effect the predetermined quality).

Regarding claim 37, 44 and 45 Ordentlich discloses identifying a target region of refinement bits of a codeblock (Ordentlich, in col. 4, lines 41-45, states "Refinement information in a bit-plane refers to those bit-plane [bn,i] for which one of those bn,i [bits] for which one of those bits bm,i.....bn+1, I are non-zero (that is information in the plane n for coefficient that has already found to be significant", which corresponds to performing a refinement coding pass to bit-planes of a code block to create refinement bits". This corresponds to identifying a target region of refinement bits of a codeblock)

generated from a magnitude refinement pass based on the bits from significant coefficients of a significance propagation of previous bitplane (Ordentlich, in col. 7, lines 51-55, states "significance information and refinement information for the second bit-plane is as follows: the second bit of coefficient C6 provides refinement information (since coefficient C6 has already found to significant with respect to previous bit plane);

and the second bits b1 of other coefficients provide significance information". This corresponds to generated from a magnitude refinement pass based on the bits from significant coefficients of a significance propagation of previous bitplane) and;

setting one or more refinement bits of the code block that do not significantly effect the resolution of the target region to a more probable symbol (MPS), such that that one or more refinement bits are quantized with respect to other refinement bits that effect the resolution of the target region (Ordentlich in col. 6, lines 32-40, states "the subsequences [which include Refinentment subsequence as noted above in claim 1] entropy encoded to extract statistical redundancy in the bitstream by estimating the probability of sequence of symbol occurring. Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". Therefore in the system of long length codes are assigned to non redundant information or less probable symbol. This corresponds to setting the refinement bits of the code block that do not significantly effect the resolution of the target region to a more probable symbol (MPS), such that that one or more refinement bits are quantized with respect to other refinement bits that effect the resolution of the target region).

Regarding claim 38, Ordentlich discloses bits that effect the resolution of the target region are using actual values of the respective refinement bits (Ordentlich in col. 6, lines 32-40, states "the subsequences [which include refinement subsequence as noted above] entropy encoded to extract statistical redundancy in the bitstream by estimating the probability of sequence of symbol occurring. Short code lengths are

assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". Therefore in the system of Ordentlich long code lengths are assigned to the less probable sequence of symbols which will effect information content of subsequence when transmitted. This corresponds to using actual value for the refinement bits that effect the resolution/predetermined quality).

Regarding claim 39, Ordentlich discloses the refinement bits set to the MPS are quantized to a value different values of the refinement bits without being set to MPS within the code block (Ordentlich in col. 6, lines 35-40, states "Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". This corresponds to the portion of the refinement bits set to the MPS is transmitted a having number of bits different the number of bits of remaining portion).

Regarding claim 39, Ordentlich discloses the portion of the refinement bits set to the MPS is transmitted a having number of bits different the number of bits of remaining portion (Ordentich in col. 6, lines 35-40, states "Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits". This corresponds to the portion of the refinement bits set to the MPS is transmitted a having number of bits different the number of bits of remaining portion).

Remarks

6. In amendment/arguments filed on 7/16/2004, applicant argued the following:

a. Ordentlich, does not show refinement bits based on the bits from coefficients that become significant in previous bitplane.

First of all Examiner would like to bring to the attention of Applicant that specification of the instant application does not discloses the above limitation. However Ordentlich, in col. 7, lines 51-55, clearly states "significance information and refinement information for the second bit-plane is as follows: the second bit of coefficient C6 provides refinement information (since coefficient C6 has already found to significant with respect to previous bit plane); and the second bits b1 of other coefficients provide significance information". This corresponds to the refinement bits are generated based on bits from coefficients that became significant in a significance propagation pass of a previous bit-plane.

b. There is no teaching or suggestion of setting at least a portion of the refinement bits to the more probable symbol (MPS).

Examiner strongly disagree with Applicant's interpretation of Ordentich reference. Ordentich in col. 6, lines 32-40, states "the subsequences [which include Refinentment subsequence as noted above in the anlysis of claim 1] are entropy encoded to extract statistical redundancy in the bitstream by estimating the probability of sequence of symbol occurring. Short code lengths are assigned to the more probable sequence of symbols, the most probable outcome is encoded with least number of bits" This corresponds to setting refinement bits to more probable symbol (MPS) based on the probability of sequence of symbol occurring by assigning short code lengths to the more probable sequence of symbols in the Refinement subsequence).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherali Ishrat whose telephone number is 703-308-9589. The examiner can normally be reached on 8:00 AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone numbers for the organization where this application or proceeding is assigned are 703-87-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-4750.

Ishrat Sherali

Patent Examiner

Group Art Unit 2621

November 24, 2004

LEO BOUDREAU
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